

THE GREAT LAKES FISHERIES LEADERSHIP INSTITUTE:
A MICHIGAN EVALUATION OF AN EXTENSION PROGRAM'S IMPACTS IN RELATION TO REGIONAL
SEA GRANT AND LOCAL PARTICIPANTS' EXPECTED LEARNING OUTCOMES

Executive Summary

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Background:

In the Fall of 2003 through Spring of 2004, the Great Lakes Sea Grant Network piloted the Great Lakes Fisheries Leadership Institute (GLFLI), an adult fisheries Extension education program. This initiative represented the coordinated efforts and resources of eight Great Lakes' state Sea Grant programs and partners, with funding support from National Sea Grant. In purpose, the program was to accomplish adult fisheries education programming targeted for Great Lakes fishery stakeholders considered to be future fisheries leaders in each state and covering the five Great Lakes (Lakes Huron, Ontario, Michigan, Erie, and Superior), as well as Lake Champlain.

This evaluation investigates Michigan components of the GLFLI program based on various levels of intended and actual program outcomes, considering the perspectives of both regional GLFLI program planners, as well as the Michigan participants targeted by this adult fisheries leadership education initiative (Bennett 1978, Robinson 1994).

GLFLI: A Pilot-Model for providing Fisheries Leadership Training

Regionally, the GLFLI was developed around a core curriculum and a format of intensive statewide and lakewide training session. These were designed to increase knowledge of Great Lakes fisheries and fisheries management as well as to develop networking and leadership skills among future citizen fishery leaders. Specific expected program outcomes were identified and described by Great Lakes Sea Grant program staff after consulting with program partner agencies (Sturtevant et al. 2002). Broadly, a stated vision for the Institute program provides:

"We envision a Great Lakes Fisheries Leadership Institute operating on a regional, lake and state level capable of providing emerging citizen fishery leaders with the knowledge and skills to effectively interact with Great Lakes fishery management organizations for the benefit of the fishery and its stakeholders. (Sturtevant et al. 2002)"

As an adult fisheries education program, the GLFLI was designed to encourage greater citizen involvement and action in Great Lakes fisheries related issues. In developing, implementing, and evaluating the GLFLI program, it is important to understand theory and research describing aspects of environmental education programming as they contribute to fostering stewardship behaviors among learners. Adult learning theory and research contribute to understanding GLFLI programming in the context of the target program audience – citizen adult learners. Community-based conservation literature generates understanding of how participant learners can be expected to apply their learning experience and in what contexts the GLFLI program can expect to have the greatest level of impacts.

Environmental Education Programming toward Stewardship Behaviors

A primary desired outcome of the GLFLI is that participants gain the awareness, knowledge and understanding, comfort, skills, and resources by which they can then participate, contribute, or

otherwise act in relation to the Great Lakes fisheries (Sturtevant et al. 2002a). Empowerment of people, individually and collectively, to address environmental issues locally and in their communities, is consistent with those often cited goals for environmental education programs on statewide, national and international scales (MEECAC 1992, NAAEE 1996, TICEE 1977, Fedler 2001). However, environmental education programming to achieve changes in learner stewardship behaviors is not a simple, linear process. Successful programming must consider and address multiple levels of essential pre-cursor variables that contribute to increased environmental action or stewardship behaviors among learners, including: entry level variables (e.g., awareness and basic knowledge), ownership variables (e.g., in-depth understanding and personal investment), and empowerment variables (e.g. comfort, skills and resources necessary to carry-out actions) (Hungerford and Volk 1990).

Understanding Adult Learners to build an Adult Learning Experience

Adults are typically self-motivated learners, participating in an education program to seek information or resources that relate to specific issues, personal learning needs, or personal challenges that are current and foremost in the minds of the individual learners (Levine 2001). Increased understanding, values, personal enhancement, career advancement, and social purposes are among some of the motivations describing why adult volunteers may choose to participate in specialized adult extension education training programs (Schrock et al. 2000). Regardless, it is to be expected that adult learners enter into their GLFLI learning experience with individual expectations toward their learning experience (Robinson 1994).

Learning is a process or cycle where learners can (1) experience or participate in an activity; (2) reflect on their actions or learning; (3) conceptualize or interpret what they have participated in or learned; and (4) apply or translate their learning to other actions, activities or settings (Kolb 1984). Kolb (1984) builds an understanding of different styles of learning and understanding or ways of perceiving and processing information. These types of learners included: (1) active learners (hands-on, trying or doing something and learning through experience); (2) reflective learners (watching or doing, concrete reflection); (3) theorizing learners (watching and thinking, abstract reflection); and (4) pragmatic learners (thinking and doing) (Kolb 1984).

Value of Citizen Leaders to Community-based Conservation

Environmental education programming to successfully foster environmentally responsible behavior is related to learners' personal connections with familiar or local community natural resources. This is an important consideration in generating successful learning experiences (Fedler 2002, Vaske and Kobrin 2001, Matthews 1997). Effectiveness of regional and statewide GLFLI programming to effect positive Great Lakes actions and impacts through citizen leaders relates to involvement of these citizen leaders within the contexts of their communities – whether the learners' community is geographic, social or organizational (Hillery 1955; Flora 1992). Community-based conservation efforts are most effective where they involve the community working collectively at the community level to conserve natural resources *of* the community, *through* the community, and *for the benefit* of the community (Western and Wright 1994).

Individually, learners are likely to consider a variety of different types of actions in relation to their environmental stewardship involvement including: consumer related behaviors, persuasion or education activities, eco-management or habitat work, political or public participation, and legal types of actions (Hungerford and Peyton 1980). These types of actions of individual learners can also be considered in the context of learners' interrelationships and communications with others. Successful environmental education programs might also create an ability to bring coalitions of stakeholders together to facilitate actions or programs within learners' communities (Monroe 1999).

Study Purpose:

The National Sea Grant Program promotes the evaluation of Sea Grant initiatives that focus on data collection and analysis on the specific standards, goals, and objectives of the program in determining the value of the effort to the Sea Grant program (Spranger and Wilkins 2001). To this end, GLFLI program planning proposals describe an evaluation value in relation to this specific program stating intent to, “assess the effectiveness of delivery (i.e. workshop evaluations)” (Sturtevant et al. 2002).

Sea Grant programs are often evaluated at various levels of program effectiveness based on Bennett’s (1978) hierarchical pyramid of program impacts (Miller et al. 2001). Bennett’s (1978) seven levels of evaluation include consideration of: (1) *resources*, (2) *activities*, (3) *participation*, (4) *participant reactions*, (5) *knowledge, attitudes, skills, and aspirations (KASA)*, (6) *practices*, and ultimately, (7) *social, economic, and environmental outcomes*. Bennett’s (1978) work serves as a foundation for this program evaluation, focusing on different levels of program impacts and inclusive of both regional Sea Grant program goals and participant responses to the program.

Stake’s (Shadish et al. 1995, Robinson 1994) work provides a secondary foundation by which this evaluation can address each tier or layer of Bennett’s program evaluation approach through: (1) describing *intended* program actions and outcomes and (2) comparing and contrasting these program intentions against *observed or actual* program actions or outcomes.

This evaluation used qualitative and quantitative methods to describe intended and actual program activities, impacts, and values of this extension-based, adult fisheries education program from the perspectives of both the regional GLFLI program and Michigan program participants. More specifically, goals of this evaluation focused on:

- (1) *Intended and actual program activities, impacts, and values of Michigan components of the GLFLI*
- (2) *Motivations, expectations, program values, and intended applications of 22 Michigan participants*

Methods:

Following a protocol approved by the MSU University Committee on Research Involving Human Subjects (UCRIHS), an evaluation was conducted to describe program impacts resulting from the Michigan components of the regional Institute programming. Utilizing qualitative and quantitative evaluation methods this study describes program impacts respective to expected outcomes set forth by the regional Sea Grant program design, as well as those expectations described by Michigan Institute participants. Data collected through this research represents two primary areas, including regional program planning documents and local Michigan participant responses to programming.

First, from a regional Sea Grant perspective, program planning and promotional documents were utilized to describe program expectations and impacts from a regional program perspective. In describing actual GLFLI program activities, this study focused on fourteen standardized curriculum components and agendas from six different training sessions to which Michigan GLFLI participants were exposed.

Second, participants’ motivations, program expectations, values, and intended fisheries leadership actions were investigated and described for 22 Michigan participants. Participant application packages, pre- and post-institute participation survey evaluations, and participant writing activities were components used in this portion of the evaluation.

Quantitative analysis of pre- and post-Institute survey data was conducted utilizing SPSS 10.0.7 for Windows (SPSS 2000). Univariate analysis was used to determine frequencies, means, and

medians. Bivariate analysis compared pre- and post-Institute responses using non-parametric Wilcoxon signed-ranks significance tests.

Qualitative analysis of participant responses included coding, categorization, and analysis for similarities, patterns, and examples of experiences. Coding was determined based on literature review, corresponding survey questions, and open coding processes.

Key Results and Findings:

Considering a regional program planning perspective, this evaluation found that GLFLI programming for Michigan participants was generally carried out as intended. Michigan participants received programming coverage for nearly all GLFLI regionally identified learning outcomes through training curriculum modules, as well as lakewide and/or statewide training sessions. Key findings included:

- ✓ *Regional GLFLI Anticipated Learning Outcomes:* GLFLI program objectives varied in specificity and consistency across various planning documents. When categorized into broad topics, anticipated learning outcomes included:
 - (1) Fisheries science (fish and habitats) (10 Learning Outcomes): fisheries management principles and history, fish biology, Great Lakes ecology, habitat, and related issues.
 - (2) Leadership (people aspects of fisheries) (16 Learning Outcomes): networking, institutional arrangements, leadership skills, action/involvement skills, economics, and related issues.
- ✓ *Michigan GLFLI Program Delivery:*
 - *Curriculum:* 8 core program modules plus “The Life of the Lakes” and various session-specific supplemental materials delivered to Michigan participants
 - *Trainings:* 1 Statewide, 5 Lakewide sessions with a full program ranging (state plus lake session) 23 to 60 contact hours.
 - *Experiential Opportunities:* Rated by participants as most valuable were networking and discussions (18.2%), field trips (e.g. commercial fishery) (13.6%), and research and monitoring opportunities (9.1%), with 1 additional participant noting that “all” experiences were beneficial. Indicated as least valuable were lectures by a particular speaker (9.1%) and leadership exercises (4.5%). Four participants indicated “none” of their experiences lacked in value, with one participant indicating a need for additional opportunities (4.5%). Twelve participants provided no response.
 - *Instructional Staff:* 20 different Sea Grant program staff (drawn from 5 state Sea Grant programs); at least 36 additional (non-Sea Grant) instructors (representing 22 unique agencies, organizations or institutions)
 - *Participation:* 22 Michigan participants completing full GLFLI process (of 28 targeted participants); representing 4 Great Lakes (8 Lake Huron, 8 Lake Michigan, 3 Lake Superior, and 3 Lake Erie) with affiliation to 43 unique fisheries stakeholder organizations or groups
- ✓ *Program Content Delivery:* All GLFLI learning outcome areas received coverage through GLFLI curriculum. Nearly all learning outcome areas received coverage during Michigan training sessions, with only the contaminants and fish consumption advisories outcome areas

lacking coverage in training sessions (though both were covered in curriculum). Program content as covered with Michigan participants during training sessions:

- *Both Lake and Statewide Meeting coverage:* networking, institutional arrangements, decision making processes, and fisheries issues
 - *Lakewide Meeting(s) coverage only:* Fish biology, Great Lakes ecology, fish production, food webs, aquatic nuisance species, fish habitats, and fish species
 - *Statewide Meeting(s) coverage only:* Leadership skills, influencing political/legislative decisions, sharing information, increasing public participation
- ✓ *High Entry-level Knowledge and Skills of Participants:* According to pre-Institute surveys, Michigan participants entered into the learning experience with high pre-Institute evaluations of their own knowledge, understanding, comfort and skills related to the Great Lakes fisheries.
- ✓ *Significant gains in Knowledge and Skills Gained:* In post-Institute surveys, participants indicated significant increases in knowledge and skills for nearly all learning outcome areas.
- ✓ *Key Program Values and Outcomes identified by Participants:*
- Primary:
 - Networking (among agencies, institutions, and stakeholder groups)
 - Learning about diverse stakeholders (e.g., sport, charter, commercial, tribal fisheries)
 - Secondary:
 - Knowledge related to fisheries history and biology/ecology, management and policies,
 - Awareness and understanding of Great Lakes issues, and
 - Access to additional resources.
- ✓ *Additional Programming Opportunities identified by Michigan Participants:*
- Development of specific leadership skill sets (i.e., education skills, habitat improvement skills, etc.), with opportunities to practice skill sets
 - Increased experiential opportunities

Michigan GLFLI participants represented a diverse group of adult fishery stakeholders. Diverse Michigan participant stakeholders also held diverse motivations, anticipated learning outcomes, program values and intended applications. Key findings included:

- ✓ *Michigan Participant Diversity:*
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|-------------------|---|
| <i>Gender:</i> | 86.4% Males : 13.6% Females |
| <i>Age:</i> | Mean= 44.5 years (Median = 46.5 years) |
| <i>Ethnicity:</i> | 90.9% White : |
| | 4.5% Hispanic : |
| | 9.1% Native American |
| <i>Education:</i> | 9% High school degree or less : |
| | 22.7% Vocational/trade school or some college : |
| | 68.2% College graduate (BS, MS, Ph.D, etc.) |

Geographic community types:

36.3% Rural/farm :
22.7% Sub-urban/Small town ($\leq 25,000$) :
40.9% Urban/Metropolitan ($> 25,001$)

Occupations: 18 different occupations represented, including fisheries related professions (commercial fishing, natural resources professionals, etc.)

Fisheries related organizational affiliations:

affiliations with 43 organizations, including: sportfishing, commercial fishing, fish habitat, watershed, natural resources professionals, and outdoor writing ($> 50\%$ of participants associated with more than one organization)

- ✓ *Motivations for Participation:* Michigan participant motivations related primarily to (1) participant values (toward carrying out education, advocacy, etc.) and (2) understanding (gaining knowledge). Secondary program motivations related to social factors (networking).
- ✓ *Participant Reactions to Program:*
 - Learning Expectations:
 - 72.7% agreed they had learned or gained what they *had originally hoped* from their GLFLI experience.
 - 81.8% learned or gained *something new or unanticipated*, beyond what they had originally hoped
 - Programming Expectations:
 - 77.3% agreed curriculum or lessons met their expectations
 - 54.5% agreed experiential opportunities met their expectations
 - 54.5% agreed they had enough opportunities to practice knowledge/skills
 - Overall, 81.8% felt their GLFLI experience to be beneficial.
- ✓ *Anticipated Leadership Actions/Service Project Activities:* through service project descriptions and leadership exercises participants identified that they were most likely to carry out actions reflecting (1) educational activities, (2) policy or legislative work, and/or (3) fisheries habitat work.
- ✓ *Communities of Work:* Michigan participants related their work primarily to local geographic areas and specific fisheries organizations. Secondly, participants indicated their leadership work to include statewide, lakewide, and Great Lakes basin-wide scopes. Most participants identified multiple levels or scales of “communities” in which they would work.
- ✓ *Influence of GLFLI on Participant Leadership Intentions:* Participants entered learning with diverse views: (1) Toward types of leadership actions, and (2) At various levels of community. Where GLFLI programming may have guided or influenced participant perspectives, GLFLI did not significantly change participants’ intended leadership applications in the context of community scope or types of leadership actions they expected to carry out.

Conclusions:

Program Resources and Activities

- ❖ *Multiple and Diverse GLFLI Program Objectives:* Regionally developed GLFLI program objectives were numerous, broad ranging, and with inconsistencies across multiple planning documents. Moreover, consistent with adult learning theory, participants also entered into their learning with diverse and individualized learning expectations (Levine 2000, Robinson 1994). Regardless, multiple, wide-ranging objectives were important in providing program value and benefits across both GLFLI programming intent and diverse participant values and needs.
- ❖ *Successful Program Content Delivery:* Curriculum, program training session formats, and networking among a diverse set of participants and instructional staff were all aspects of the Michigan GLFLI program that were generally carried out as originally intended in regionally developed GLFLI planning documents (Sturtevant et al. 2002). Program objective-related topics which received increased emphasis through multiple overlapping modes of delivery, related to increased participant gains and participant-indicated program values. These results are consistent with learning theory that describes learning as a multi-step and circular process, understanding that individuals have different styles of learning (Kolb 1984, Hungerford and Volk 1990).

Participation in Michigan GLFLI Program

- ❖ *Quality versus Quantity – recruiting diverse stakeholders as a priority over participant numbers:* Total participant numbers (n=22) completing a full GLFLI experience were slightly lower than expected (n=28) for Michigan programming. However, the Michigan GLFLI programming successfully generated a diverse set of participants, representing a significant representation of the targeted diversity of stakeholder groups. Furthermore, stakeholder groups not represented as participants were identified and incorporated as guest instructors. For Michigan participants, learning and networking among a diversity of stakeholders was identified as the most valued outcome of their GLFLI learning experience.
- ❖ *Diverse Stakeholders generate diverse programming needs:* Success in generating a participant group of diverse stakeholders resulted in a participant group of equally diverse motivations, values, needs and expectations. Consistent with adult learning theory, these did not always match GLFLI anticipated learning outcomes (Levine 2000, Robinson 1994). Nonetheless, these are important considerations in developing positive learning experiences among adults. Where participants held expectations similar to those identified by the GLFLI organizers, individual expectations were more specific and less broad ranging than those identified by organizers. As discussed in adult learning theory, learning needs and expectations of participants related to diverse participant values and needs in relation to their individually intended leadership actions (as well as communities in which these actions would be carried out).

Michigan Participant Reactions to Program

- ❖ *Participant Program Values related to Program Delivery and Learning Experience:* The overall GLFLI experience was generally valued as a beneficial experience for participants. However, the degree to which topic areas were covered and overlapped across modes of delivery (e.g.,

curriculum, training session agenda items, experiential opportunities, etc.) related to the program values and learning outcomes rated as most important by participants.

- ❖ *Resulting Participant Program Values differed from initial Motivations and Program Expectation of participants:* Program values most recognized by participants differed from motivations and original participant expectations. In relation to adult learning theory, the GLFLI served a role in providing a learning experience and providing resources sought by participants (Levine 2000), and additionally served as an opportunity to introduce participants to new and different learning experiences above and beyond their expectations. Moreover, participants identified some of these “unanticipated” learning opportunities as most valuable or beneficial aspects of their GLFLI experience. Key values identified related to participant motivations and expectations:
 - Primary values included networking and understanding of diverse fishery stakeholders (relates to “social” motivations, a secondary motivation).
 - Secondary values included knowledge related to fisheries history and biology/ecology, management and policies, Great Lakes issues, and access to additional resources (relates to “understanding” motivations, a primary motivation)
 - “Values” related motivations (skills related to carrying out education, advocacy, etc.)—a primary participant motivation – were not identified by participants as key program outcomes.

Knowledge, Attitudes, Skills, and Aspirations (KASA)

- ❖ *Participant Background Experiences:* Participants entered into learning with significant knowledge and experiences related to Great Lakes fisheries. This is consistent with Adult Learning theory that suggests adult education should anticipate diverse and significant participant background knowledge and experiences.
- ❖ *Significant increases in Participant Knowledge and Understanding:* Based on GLFLI program objectives, participants’ self-rated knowledge and understanding increased (statistically significant) in all outcome areas. Participants indicated that increased knowledge and understanding relating to Great Lakes fisheries was one of the most important things gained through their GLFLI experience, second only to their opportunities to network and gain understanding of diverse user groups. Knowledge and understanding are important and necessary precursor variables in fostering environmental stewardship behaviors among learners (Hungerford and Volk 1990)
- ❖ *Opportunities for further development of “Empowerment” Variables:* Prior to their GLFLI experience, participants indicated that they placed an importance on gaining action-related skill sets related to education, habitat work, or public/political involvement. While indicating statistically significant increases in these areas, no participants identified these skill sets as important gains from their GLFLI experience. These results may indicate that (1) the GLFLI did not provide enough opportunities to expose participants to these skill sets and opportunities to practice these skill sets; or (2) participants received these skill sets as a part of their training, but in the end felt other aspects of their GLFLI learning experiences (i.e. networking) were more important. Regardless, these skill sets are important empowerment variables necessary in fostering stewardship or fisheries leadership behaviors among learners

(Hungerford and Volk 1990), therefore opportunities exist to further develop or expand GLFLI programming to include more elements of such skill development or other empowerment variables necessary for fostering participant actions through their experience.

Practices (Intended Actions or Application of GLFLI by Michigan Participants)

- ❖ *GLFLI Program may influence, but not significantly change, intended Service Projects/Leadership Actions:* In application of their learning experience, participants indicated a variety of environmental action typologies in describing their intended service projects and leadership activities (Hungerford and Peyton 1980). Consistent with adult learning theory, the Michigan GLFLI participants held individualized motivations for participating and specific intended applications of their learning experiences (Levine 2000, Robinson 1994). The GLFLI may have influenced, but did not result in drastic changes in participants intended actions or participants' sense of the community in which these actions would be carried out.
- ❖ *"Communities" of Work ranged widely, but with Localized Emphasis:* Michigan participants indicated a likelihood of working on multiple levels of community ranging from local geographic communities to lakewide or Great Lakes basin-wide activity. However, local geographic areas and specific fisheries organizations were more often noted as the community contexts of work indicated by participants. Consistent with community-based conservation theory, participants were more likely to carry out leadership actions for the benefit of Great Lakes natural resources of specific value or interest to themselves or their community. Regional programming that enhances these community-based conservation efforts can generate significantly greater returns in conservation work, in this case fisheries leadership actions, carried out by program participants (Western and Wright 1994).

Program Recommendations:

- *Clarify intended learning objectives*, indicating specific standards by which to measure achievement of these objectives; promote consistency in describing program objectives across various planning documents.
- *Investment of significant programming or contact time, diverse training formats, and multiple modes of delivery* may be necessary in fully achieving multiple and diverse program objectives, particularly objectives that speak to multiple variables of relating to changing learner behavior (e.g., awareness, knowledge and understanding, and empowerment comfort and skills). The current investment of a target 40 – 60 hours of contact time is an appropriate and realistic initial investment in successfully condensing the learning curve toward building a base awareness and knowledge base among fisheries leaders. However, education toward environmental action should be viewed as a life-long learning experience, and consider additional follow-up contact or support opportunities, such as through advanced programs or experiential training opportunities. This follow-up is conceptually built into the GLFLI model, and implementing follow-up opportunities may be necessary to fully achieve desired fisheries leadership actions and results.
- *Overlap in coverage for program priorities identified as most important*, particularly those values and expectations considered to be mutually important to both regionally by Sea Grant and participants to the program, an example being an understanding of diverse fishery

stakeholders. Multiple modes of delivery including curriculum, classroom learning, and experiential opportunities occurring during both lakewide and statewide training sessions are conceptually included in the GLFLI model and relate to program values recognized by Michigan participants. The Michigan GLFLI programming, as carried out, provided multiple, overlapping coverage in many program topic areas, but was not able to cover in-depth all program topic areas indicated for the GLFLI in the amount of time provided for programming. Future GLFLI programming should consider increasing programming contact time in providing more overlapping, multi-mode delivery in content, or consider a better prioritization of learning objectives to be covered in-depth versus learning outcomes of lesser importance. Participant needs should be considered if developing priorities for coverage toward program objectives.

- *Investment in training and coordinating GLFLI instructors and resources* may help increase overlap of important learning experiences related to key learning outcomes. Delivery of the Michigan GLFLI required intensive coordination of multiple training resources and instructors. Investing in training and coordinating instructors and resources may also help to improve the specificity and consistency of intended program learning objectives.
- *Expanding the roles of local Sea Grant staff and stakeholder advisors.* Program delivery relied on local Sea Grant staff and stakeholder advisory groups. This format increases program value among participants in developing networks, information and resources, and experiences most relevant to participants' communities and local fishery resources.
- *Maintaining successful aspects of programming* that promote (1) networking of diverse stakeholders and (2) understanding of basic knowledge and understanding relating to Great Lakes fisheries. These were key learning outcomes identified both regionally for the GLFLI by program organizers, as well as Michigan participants based on their experience.
- *Allow for flexible programming designs* that take advantage of learning opportunities related to the knowledge bases and learning needs of a diverse stakeholder audience. Such flexibility was reflected in Michigan aspects of GLFLI programming, where the GLFLI experiences differed for participants based on lake groups they represented. This variation in programming reflected primarily only inputs from program planner and guest instructors. Opportunities exist to enhance GLFLI programming through flexibility that is more reflective of participant inputs (e.g., applications, pre-institute surveys, introductory discussions, etc.)
- *Add focus on specific "action" or "empowerment" skills.* Opportunities exist for additional programming to increase opportunities for learners to gain and practice specific skills necessary to carry out specific leadership actions. This possibly could be done through advanced trainings, additional contact, supplemental resources, and/or continuing support.

- *Incorporate participant service projects* into the learning process. Diversify types of knowledge and skill sets provided in trainings to accommodate specific values and needs of GLFLI participant classes.
- *Place an emphasis on community-based programming*, with programming that incorporates multiple levels of “community” action. While some programming should continue to speak to Great Lakes basin-wide institutional arrangements and decision-making processes, other aspects of programming should focus on leadership skills that can be utilized at local geographic community levels or within specific fisheries interest organizations.
- *Learner-relevant learning experiences*: The influence of GLFLI is likely to be greatest where learning is most relevant to the participants. Opportunities for increasing program impacts exist where the GLFLI can serve to guide participants intended actions by providing knowledge, skills, resources and contacts as tools to empower their desired actions. The GLFLI program generates a participant application process. This process, as well as pre-institute surveys and introductory discussions among participants, can be better utilized to generate programming that is relevant to GLFLI learners.

Research Limitations:

- Non-random sample (purposive sample of Michigan participants).
- Small sample size (n=22), limiting statistical analysis tools.
- Cannot generalize evaluation results beyond Michigan GLFLI learners.
- Variability in content and order of GLFLI training exposure for Michigan participants.
- Evaluation considers short-term program impacts only, and other than anticipated “impacts” does not consider actual long-term program impacts.
- Internal program evaluation may present certain research biases.

Further Evaluation Considerations:

- Conduct repetition of evaluation based on other states participants and future year classes of GLFLI programming
- Generate standardized tests as evaluation instruments to gauge actual knowledge and skills of participants, rather than self rated indicators.
- Conduct evaluation of program values and impacts based on perspectives of secondary program stakeholder (e.g., state, federal, or bi-national agencies/institutions)
- Long-term evaluation of program impacts, including longitudinal studies of long-term participant value and use of their GLFLI experience in their fisheries leadership activities.

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